

Claims

1. Apparatus (1) for treating chemical substances in a microwave field, having:
 - 5 - a microwave chamber (9), in which microwave radiation acts on the substances,
 - a container (12), which extends at least partly in the microwave chamber (9), for receiving the substances to be treated, and
 - 10 - a device for spirally transporting the substances in the container (12).
2. Apparatus (1) for treating chemical substances in a microwave field, having:
 - 15 - a microwave chamber (9), in which microwave radiation acts on the substances,
 - a flow-through container (12), which extends at least partly in the microwave chamber (9), for receiving the substances, and
 - 20 a mixing device (61) for thorough mixing of the substances while they are being transported in the axial direction through the flow-through container.
3. Apparatus according to Claim 1 or 2, characterised in
25 that the spiral guide or the mixing device (61) is realised by a conveyor worm.
4. Apparatus according to Claim 3, characterised in that
30 the conveyor worm brings about forced conveyance of the substances in the flow-through container (12) as a result of a rotary drive (58).

5. Apparatus according to one of the preceding Claims 2 to 4, characterised in that the flow-through container (12) is of hollow-cylindrical design and the conveyor worm is arranged with little play in the flow-through container.

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6. Apparatus according to one of the preceding claims, characterised in that the longitudinal dimension, extending in the microwave chamber, of the flow-through container (12) and of the spiral guide or of the conveyor worm is a multiple of the inner cross-sectional dimension of the flow-through container (12), in particular at least 5-times or at least 10-times the inner cross-sectional dimension.

7. Apparatus according to one of the preceding claims, characterised in that it is arranged vertically or such that it can be inclined and locked in the respective inclined position.

8. Apparatus according to one of the preceding claims, characterised in that the flow-through container (12) is connected in its end regions to an axial or radial flow-through line section (21; 45), respectively.

9. Apparatus according to Claim 8, characterised in that the axial flow-through line section (21) passes through a preferably horizontal housing wall (4d) bounding the microwave space (9).

10. Apparatus, in particular according to one of the preceding claims, characterised in that the flow-through container (12) and preferably also the conveyor worm protrude from the microwave chamber (9).

11. Apparatus according to Claim 10, characterised in that an inlet or outlet for the flow-through container (12) is arranged in the protruding end region of the flow-through
5 container (12).

12. Apparatus according to one of the preceding claims, characterised in that the treatment chamber (13a) of the flow-through container (12) is connected to a pressure-
10 limiting valve (44), which is preferably adjustable.

13. Apparatus according to Claim 12, characterised in that the pressure-limiting valve (44) is arranged in a flow-through line section, in particular in an outlet line
15 section, and is preferably displaceable so far that in its open position it frees the flow-through line.

14. Apparatus according to one of Claims 10 to 13, characterised in that a cooling or heating device (35) is
20 arranged in that region of the flow-through container (12) which protrudes from the microwave chamber (9).

15. Apparatus according to one of the preceding Claims 10 to 14, characterised in that a connecting piece (42) is
25 arranged in that region of the flow-through container (12) which protrudes from the microwave chamber (9).

16. Method for treating chemical substances in a microwave field, in which
30 - microwave radiation acts on the substances in a microwave chamber (9),

- the substances move in translatory fashion in a container (12) which extends at least partly in the microwave chamber (9), and
- the substances in the container (12) are, furthermore,
5 moved actively in a direction transversely to the translation.

17. Method for treating chemical substances in a microwave field, in which
- 10 - microwave radiation acts on the substances in a microwave chamber (9),
 - the substances move in a container (12) which extends at least partly in the microwave chamber (9), and
 - the substances in the container (12) are, furthermore,
15 mixed actively by a mixing device (61).